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COUNTRY USSR REPORT

TOPIC Tubeworks Novo Trubnyi Zavod 702/703 in Pervouralsk,
District Sverdlovsk, Russia

EVALUATION PLACE OBTAINED 25X1

DATE OF CONTENT 25X1

DATE OBTAINED PREPARED 22 November 1954 25X1

REFERENCES

PAGES 7 ENCLOSURES (NO. & TYPE) 2 - two sketches and legends on ditto

REMARKS

This is UNEVALUATED Information

Name and Location of the Plant.

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1. The complete designation of the tubeworks, named by some tubeworks Pervouralsk, by others Novo Trubnyi Zavod or Zaved 702/703, is Pervo-Uralski Novo Trubny Zavod 702/703 Imeni Stalina.
2. The plant is located at the southeast end of Pervo-Uralsk, district Sverdlovsk. Most of the 50-60,000 inhabitants of the town are employed by the plant. The town lies approximately 30 to 40 kilometers west of Sverdlovsk at the upper course of the Chusovaya river near the 7 to 10 meters wide highway and the double-track railway Melotov-Kungur-Sverdlovsk.
3. The plant lies directly north of the highway and is connected with the Talitsa station by an 8 to 10 track switching yard in the east. Private sidings run through the plant and have a connection southwest to the Khrompik station, which lies about one-half kilometer southwest of the plant's main entrance; the Talitsa station lies 3 kilometers east. The main railway line Kungur-Sverdlovsk, on which both stations are located, crosses the highway Melotov-Sverdlovsk about 2 kilometers south of the plant (limited crossing).
4. South of the highway is the plant's transformer substation from which a multiphas long-distance transmission line and a high tension transmission line operate east towards Sverdlovsk. North of the plant is a peat bog.
5. The plant's mine and ore-dressing plant are situated between Khrompik station and Revda, a place 10 kilometers south on the railway line Kazan-Sverdlovsk. They are approximately 2 or 3 air line kilometers

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from the plant west of the road that leads from Pervouralsk to Revda, near the river and near a place called Magnitka.

6. The plant is mainly surrounded by open country, except northeast and southeast are wooded hills; the northeast hills supposedly extend as far as one-half kilometer from the plant.

History of the Plant.

7. It is asserted that the tubeworks were built in the 1930s and were, except for the Taganrog plant, even then considered to be the most important tubeworks in Russia.
8. During the war, the plant was supposedly converted to the production of gun barrels, projector barrels, projectile blanks and airplane bomb blanks; it is also believed that a new building program was initiated, but that most of the building was continued after the war.
9. The aim of the development study after 1945 was to make the tubeworks of Pervouralsk the largest and most modern tubeworks for seamless tubes (Mannesmann method) and drawn tubes in Russia. The new part of the plant was to have the same output as the old one.
10. It was intended to put the two new production buildings Sch and W into full service in early 1954. Building Sch was begun in November 1950 and completed August 1951; building W, begun in 1951, was completed by the middle of 1953; the installation of the machines was completed in both buildings by 1953.
11. New improvements and changes were made on both buildings according to directions from Moscow after October 1952. These improvements included the rebuilding of rolling mill trains and of furnaces in building Sch. This was done to improve the mechanical power and raise the furnace temperature.
12. In 1952, the building of a power station was started and was half completed by September 1953.
13. The new buildings of the plant are to be constructed in such a way that they can be converted without difficulties and without new installations to produce armaments, such as tubes and gun barrels and allegedly airplane bombs; this applies also to the large rolling mill train and the new tube drawing installation.

Outlay of the Plant Area.

14. The entire plant area comprises 3 to 4 square kilometers, that is 1 - 1.5 kilometers x 2-3 kilometers.
15. The old part of the plant consists of three large buildings of 40 x 250, 60 x 180 and 100 x 200 meters.

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16. The new part of the plant consists mostly of the two new buildings Sch and W, each divided into 5 sections. Building Sch measures about 200 x 350 meters. Installed in it are two oil fired SM (Siemens-Martin) furnaces of 100 and 225 square meters heating area respectively; 6 - 8 gas fired soaking pit furnaces (preheating furnaces), 7 - 8 electric annealing furnaces; 2 rolling mill trains of 200 and 80 meters length respectively and 2 rolling mill trains of 100 meters length each (cross rolling mill for seamless tubes), 1 drawing roll train, 4 straightening machines, several drawing machines, 1 fully automatic casing-straightener, several extrusion presses for tubes and tube bending machines, 2 medium sized and 4 large sized lathes with a working area of 2 meters, 4 large air hammers (Demag product), 1 drop forge and 10 or 11 traveling cranes of which 1 or 2 have a carrying capacity of 45 to 50 tons, 4 of 12 to 15 tons and 5 of 7½ tons. Some of the

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rolling mill trains are alleged to have been disassembled goods from Korea or Manchuria. It is also said that most of the rolling mill machines and machine ~~tools~~ originated in the United States of America. The electric power plant consists of 2 up-to-date dry rectifiers and 6 to 8 transformers of 2,500 volts or 10,000 kilowatts.

The dimensions of building W are 150 x 250 meters; its main installations supposedly consist of several drawing roll trains and 2 or 3 small rolling mill trains. Its specialty is tube drawing, which is a factor in the armament industry. The remaining installations in building W include an SM furnace of about 200 square meters hearth area, 3 or 4 gas fired soaking pit furnaces, a large number of lathes, casing-straighteners, tube bending machines and 6 traveling cranes of at least 15 tons carrying capacity. The transformer unit consists of 2 rectifiers and 4 transformers of 4-5000 volts. The machines and the other installations were for the most part imported from Dresden, Berlin and from the Meuselwitz Motor- and Machine Factory.

17. The mechanical repair shop was expanded and improved; its dimensions are 40 x 120 meters and it has a forge, 4 to 6 annealing and tempering furnaces, about 25 to 30 up-to-date metalworking machines and machine tools such as lathes, planning and milling machines, tube rolling mills, gear wheel machines and multiple-purpose automatic machines.
18. Besides the administration buildings, the central depot, coalyard, ore deposit, scrap yard, iron deposit, steel deposit and finished product warehouse, there are also, partly outside of the plant area, a peat moor, a mine, surface mining with an ore washing room and a dressing plant, likewise a gray - iron foundry and a steel - casting foundry, a molding shop containing several Krupp - extrusion presses, a cement works, a sawmill of about 60 to 70 cubic meter daily out work, carload storage tank with at least 25 tanks of 300 to 1000 cubic meter capacity, concrete tanks for fuel oil of 200 x 100 meters in size, several garages, a switchyard and a shunting station with an engine shed, a furnace for peat charring and an electric power station.
19. The furnace for peat charring, approximately 100 : 150 meters in size, supplies not only the furnaces fired by gas, but also the furnaces fired by oil with oil from low-temperature distillation. Moreover, the peat gas is filled in steel cylinders (own product) and exported.
20. The electric power plant consists of a transformer substation, approximately 60 x 130 meters, sometimes erroneously called the old power plant, and a new power plant, approximately 70 x 200 meters, also called heat-engine generating station. The transformer substation operates with 3 transformers, totalling about 6000 volts. The installations of the new power plant, supposedly include 3 powerful steam turbines.
21. The plant's transportation pool has 8 to 10 switch- and works engines, 2 or 3 rail cranes, 20 to 30 MAS (Machine Lending Station) ~~trippers~~, trucks, 3 or 4 leveling tractors, many dredgers and grab-bucket conveyors mounted on caterpillar - or wheeled undercarriages, some tractors and more than 100, some assert 300 to 400, motor vehicles.

Production.

22. The production program of the plant, as far as sources could obtain information, comprises, besides the initial products, FE-alloys the following products: pig iron, SM (Siemens-Martin)-steel, cast iron pipes, seamless milled and drawn tubes, butt-welded milled tubes, oxygen cylinders, boiler casings, tube blanks, and gun barrels, salvo guns and trench mortars, machine gun barrels and rifle barrels.
23. It was observed that the tubes had the usual thickness, diameter and dimension of 1 - 40 millimeter thickness of pipe wall, 10 - 450 millimeter inside diameter and 4 - 15 meter length. The tubes are usually exported with

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24. Cast-iron pipes are chiefly produced for sewerage purposes, seamless milled tubes for plumbing, drawn seamless tubes for gas-, water-, oil lines and for drilling-tools. Line pipes or tubes are in part welded, also boiler casings of large dimensions up to 2.50 meters diameter and 3 meters length. The oxygen bottles have a diameter of 35 to 40 centimeters and 2 to 2.5 meters height.
25. Gun barrels, projector barrels and small-bore barrels supposedly are produced only in the new part of the tubeworks, especially in building W, and in part also in building Sch. The diameters of bore are of gun barrels 7.6, 18.5, 20.5 and 28.5; of projector barrels 12.0. The change-over to armament production in other buildings allegedly will be accomplished in short time.
26. Forged armored wheels supposedly are produced in 40 and 70 centimeters wheel diameters and in approximately 20 centimeters thickness.
27. The daily output of thin-walled tubes of small diameter which are usually shipped in 10 to 15 meters length is between 15000 and 28000 pieces. The daily output of the milled tubes is 600 to 750 tons, of drawn tubes 200 - 300 tons.

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Raw Material and Auxiliary Supply.

29. Outside current is drawn from a high-voltage line coming from Sverdlovsk and is converted to 220/380 volt in the plant's transformer substation. The high-voltage line supposedly is a 200 kilovolt overhead line with 3 to 5 phase variations.
30. The peat gas plant or peat charring plant receives its supply from the plant's peat moor. The daily peat consumption varies between 600 and 2400 tons. Some sources agree that it amounts to 1200 to 1400 tons a day. There are rather large peat stocks inside and outside the plant.
- 31.
32. The coal supply, bituminous coal and coke, comes from Karaganda, Vorkuta and the Donbas area; the water supply originates from the municipal water net. The new heat-engine generating station received a daily supply of 5600 - 6400 tons. Allegedly repeated irregularities in the supplying of water were observed.
33. A part of the metallurgical ores used in the plant, especially chrome nickel ores and manganese ores, were extracted from the plant's ore deposit, but the greater part of the ore supply comes from outside regions. It is supposed that 11000 to 14000 tons of ore are delivered daily.
34. From the iron- and steel material it was seen that various kinds of steel are processed, such as cast steel, ingot steel, wrought iron, tool steel, heat resistant and acid-proof steels, and various alloy steels. The billets supplied, bars and cogged ingots, round iron and squares were up to 5 meters long and had a diameter of up to 150 millimeters.

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35. The steel furnaces were charged from time to time with pig iron delivered in ingots.

The depot usually hold several thousand tons.

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Schedule of Operation, Employees, Executives.

36. Workdays as well as Sundays are divided into 3 shifts of 8 hours each. On Tuesdays production output is stopped and only the repair shifts carry on. To relieve the electric supply lines, the surrounding plants rotate their non-production days.
37. It is believed that the plant employs approximately 6000 to 10000 persons per shift, or a total of 18000 to 30000. The estimate is 6000 to 7000 per shift or a total of 18000 to 20000 persons.

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38. The number of employees for the old part of the plant including the annexed buildings is estimated to be 9000 to 10000 or about 3000 per shift. The same estimate is given to the number of employees of the new part of the plant including the annexed buildings. Building Sch employs 600 to 800 persons per shift or 1000 to 1200; the mechanical repair shop employs 150 to 200 per shift or 500 to 700 persons.

39. The crew consists mostly of Ukrainians, White Russians, Wolga Germans and lately also Asians. The latter are mostly employed as laborers. Foreign personnel, especially foreign experts were not observed, except some German specialists engaged by a building group responsible for the erection of steel construction and power stations.

40. The estimate of employed women varies. In the metallurgical steel and tubes production, the estimate is about 30% to 40%; in outside work, such as work in peat moors and quarries, in ore mining and ore dressing, in transportation, in warehouses, shipment and administration about 60% or more are women employees.

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41. All workmen receive a weeks vacation. Some of the skilled workers and specialists live in modern quarters which have central heating. The workmen's dwellings located outside of the plant area have play- and sport grounds as well as schools and hospitals.

42. The average monthly salary varies partly between 600 - 1000 rubles, and partly between 800 - 1500 rubles. Engineers supposedly earn 1500 - 2500 rubles, electricians 1000 - 1200 rubles, skilled workers 700 - 1000 rubles and laborers 400 - 800 rubles a month.

43. The management of the tubeworks is in the hands of a former major-general,

25X1

44. 2 different managements of construction: One was in charge of building, the second of machine installations and technical measures. Heads of the building management are reported to have been the Russians Velkov (fnu) and Remanenke (fnu) and the above mentioned Furmanov, who evidently held that position alternately. The technical management was in charge of Skorepad (fnu), a Russian.

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Security Measures in the Plant.

45. The whole plant area is fenced in by a 2 $\frac{1}{2}$ or 3-meter high barbed wired boarding fence; on the west side of the plant is a brick wall, 3 meters high. Every 50 - 100 meters are watch towers, which are manned by guards evenings and nights. All gates are also guarded, these, however, day and night. The incoming and outgoing traffic, and the identification papers, are strictly controlled. A uniformed plant police force is responsible for the guarding of the plant and for the patrols, and is provided with carbines, automatic pistols and watch dogs. It is subordinate directly to the MWD (Ministry of Internal Security). The force's strength is estimated to be 100 - 150 persons; many of them are women.
46. The plant has its own fire department with at least 3 engines and 2 or 3 modern motor fire engines. Most of the fire department's equipment came from Germany.
47. It has been observed that several buildings with flat roofs are equipped with antiaircraft installations. In the administration building and on other key points modern airraid shelters were built. Most buildings of the plant are painted with camouflage paint.
1. Comment. Details of the plant's surrounding are shown in Annex 1; [redacted] 25X1
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2. Comment. Details concerning the plant's inside area are shown in Annex 2. [redacted] 25X1
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3. Comment. The following details are known concerning the production set-up: The plant was built between 1930 - 1934. Production output was started with a tube rolling mill (3 Stiefel rolling mill trains) and a tube drawing mill in 1935. In 1942/43, some more rolling mill trains and a drawing mill from Nikopol were added. War production consisted of gun barrels, mine projector barrels, projectile blanks, aerial bomb blanks, drawn steel tubes and oxygen cylinders. Toward the end of the war, 3000 workmen were employed per shift in a three shift operation; 40 percent of them were women, about 15 percent were juveniles. After the war, production output was again changed over to the production of tubes, such as tubes for drilling-tools, pumps, compressors, superheaters, cars and tractors, water pipes, gas- and steam pipes, pipe lines, ball bearing tubes and as a speciality tubes made of rustproof and acid-resistant steel. A large part of the output consists of thin-walled tubes of small and very small dimensions, cast-iron pipes for the sewer system and oxygen cylinders. In 1948, 133 new tube dimensions were introduced, among them 4 rustproof; in 1951, 10 different kinds and dimensions of tubes and 9 various steelgrades were added to the production output.
- | | |
|---------------------|-------------|
| Total production of | |
| 1938 | 103000 tons |
| 1941 | 227000 tons |
| 1943 | 313000 tons |
- Total production of 1945, 1947, 1951, [redacted] 25X1
- | | |
|------|-------------|
| 1945 | 370000 tons |
| 1947 | 389000 tons |
| 1951 | 432000 tons |
- The output increased yearly; waste production amounted only to 2.1 percent in 1952.

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Before the new production buildings were put into operation, the plant had the following layout:

- Smelting Plant:** 2 charcoal furnaces of 300 cubic meter useful capacity each for Fe alloys and special pig iron.
- Steelworks:** 2 SM furnaces of 20 and 60 square meter hearth area respectively.
- Foundry:** 1 cupola furnace for gray iron and 2 electric furnaces for cast steel.
- Tube rolling mill:** 1 three-high Billet mill train, 1 Stiefel rolling mill with 3 mill trains, DEMAG product for welded tubes of $1\frac{1}{4}$ - $4\frac{1}{2}$ inch diameter with a yearly output of 66000 tons, engine power of 2300 kilowatt, generator power of 2150 kilowatt. 1 Stiefel rolling mill with 2 cross rolling mill trains and 1 pilgrim step rolling mill train, Meier product for welded tubes of $2\frac{3}{8}$ - $8\frac{5}{8}$ inch diameter, with a yearly output of 60000 tons, engine power 4570 kilowatt, generator power 3300 kilowatt. 1 extrusion press for tubes and a rolling mill, Erhardt method, output unknown.
- Tube drawing mill:** 1 jointing plane, Weismann product for welded tubes of 60 - 220 millimeter diameter with a yearly output of 60000 tons; engine power 1540 kilowatt; generator power 1460 kilowatt.
1 jointing plane with a breaching machine, drawing roll train, a tube lathe, a sizing press and a cutting-off machine, make unknown, for welded tubes of 150 - 200 millimeter diameter with a yearly output of 37000 tons; engine power approximately 2000 kilowatt.
1 tube pickling house with 3 annealing furnaces, 6 draw benches, 7 compressed - air hammers, tube ends reduction machine and Abramsen-leveler, output unknown.
- "Ballon" section:** Adjusting shop for aerial bombs, projectile blanks and high-pressure cylinders, several annealing- and tempering furnaces, 25 pneumatic hammers for reduction of tube ends, several automatic machines and lathes, output unknown.
- Boiler forge:** Production of welded tubes and boiler casings; installations of the forge unknown.
- Mechanical repair shop:** 3 thermite furnaces, numerous lathes, drilling machines, planning works, milling machines and other machines for detaching cuttings.

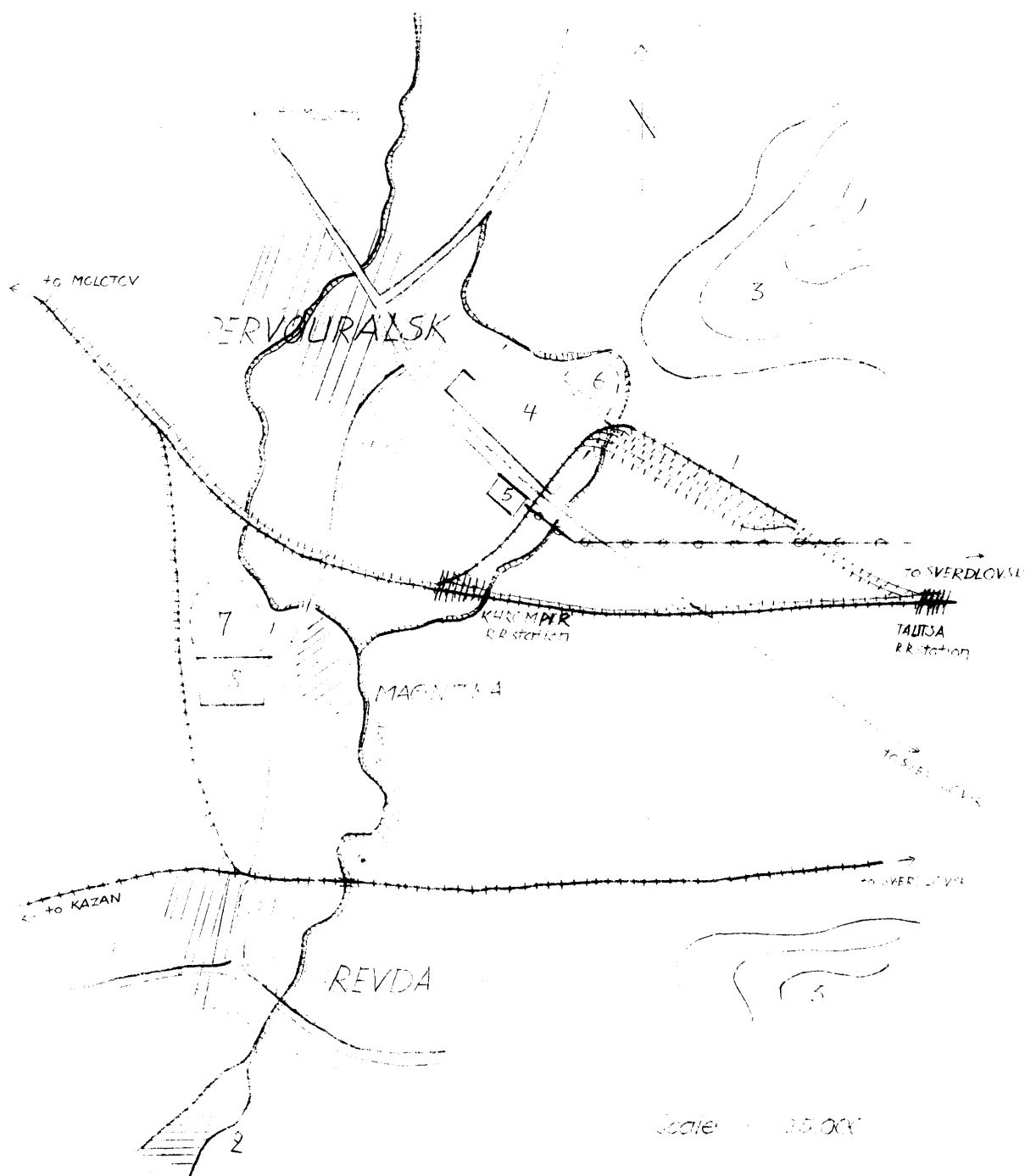
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Annex 1

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Annex 1

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Plan of Pervouralsk Tubeworks

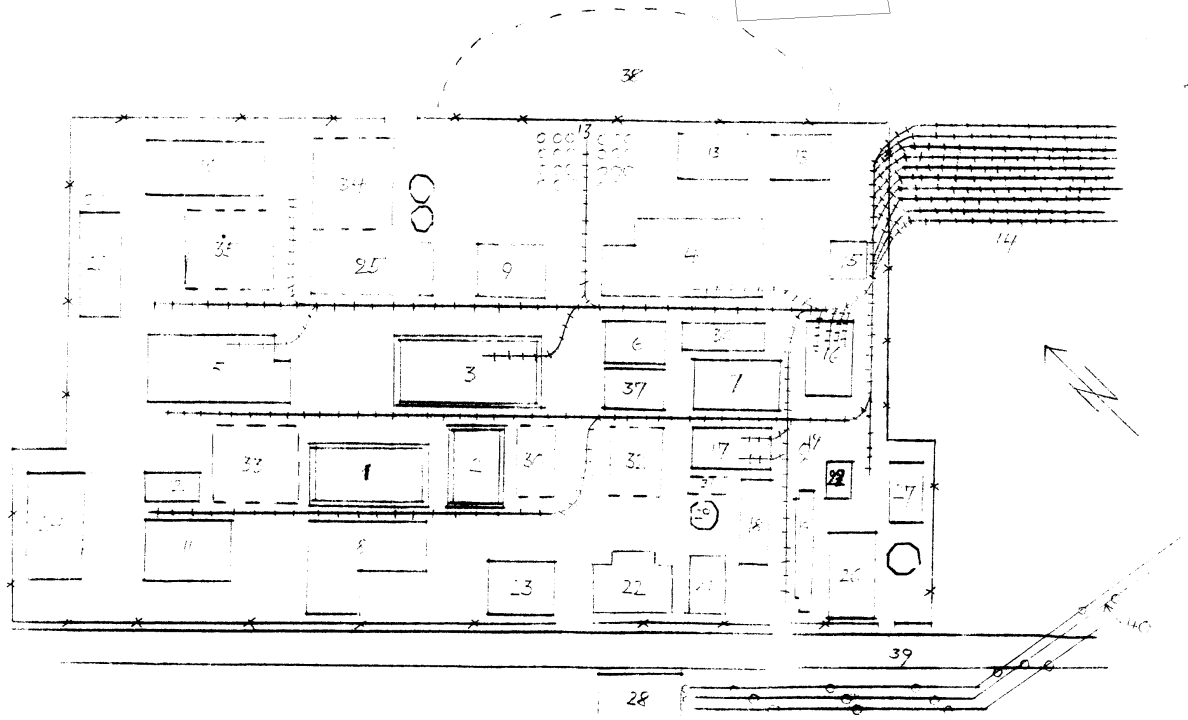
Legend:

- 1 Shunting station
- 2 Reservoir
- 3 Wooded chain of hills
- 4 Tubeworks Pervouralsk
- 5 Transformer substation
- 6 Peat moor
- 7 Open-pit mining
- 8 Ore dressing plant

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Annex 2

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Annex 2

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Layout Plan of the Pervouralsk Tubeworks

Legend;

- 1-3 Old part of the plant
 - 4 New part. Building Sch
 - 2 SM (Siemens-Martin) furnaces
 - 6-8 preheating furnaces
 - 7-8 electric annealing furnaces
 - 4 rolling mill trains
 - 1 drawing roll train
 - 4 straightening machines
 - several drawing machines
 - 1 casing straightener
 - several extrusion presses for tubes and tube bending machines
 - 6 lathes
 - 4 air hammers
 - drop forge
 - 10-11 traveling cranes
 - 2 rectifiers
 - 6-8 transformers
- 5 New part of the plant. Building W
 - 1 SM furnace
 - 3-4 annealing furnaces
 - 2-3 rolling mill trains
 - several drawing roll trains
 - several lathes
 - several casing straighteners and tube bending machines
 - 6 traveling cranes
 - 2 rectifiers
 - 4 transformers
- 6 Mechanical repair shop
 - 4-6 annealing- and tempering furnaces
 - lathes
 - planning- and milling machines
 - boring mills
 - gear machines
 - multiple-purpose automatic machines
- 25-30 machines
 - forge

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Annex 2

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- 7 Iron foundry
- 8 Steel foundry and molding shop
- 9 Mechanics workshop, or boilerhouse
- 10 Cement works
- 11 Sawmill
- 12 Carpenter shop
- 13 Carload storage tanks. 20-25 tanks, several fuel-oil concrete tanks
- 14 Shunting station
- 15 Signaling device
- 16 Engine shed for 6-10 engines
- 17 Railroad repair shop
- 18 Garages
- 19 Storage tanks with several gasoline tanks
- 20 Tractor station with several Kerosene tanks
- 21 Fire department
- 22 Administration; 2 buildings
- 23 Plant school
- 24 Bakery
- 25 Gas plant, furnace for peat charring with 2 cooling towers
- 26 Electric power plant, boilerhouse with cooling tower
- 27 Electric power plant, machinehouse
- 28 Transformer substation
- 29 Water cooling tower
- 30 Filter plant
- 31 Oil tank, collecting tank
- 32 Coolyard, scrapyard
- 33 Lumberyard
- 34 Peat bog
- 35 Building material storage place
- 36 Warehouse, finished product depot
- 37 Central depot
- 38 Peat moor
- 39 Road between Molotov - Sverdlovsk
- 40 Long-distance transmission line

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